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# YOU and FOREST FIRES





# Forest Fires Are Destructive

Forest fires raging out of control—wildfires—are an awesome and terrifying sight. They have aroused fear from earliest times. The damage they do is appalling.

Forest wildfires spoil natural beauty and lower the quality of our environment by destroying countless graceful trees, spoiling lovely scenic vistas, and adding to pollution of the countryside.

They make forest recreation areas, roads, trails, and streams less attractive—to campers and picnickers, and to boating, swimming, hiking, and skiing enthusiasts.

They contribute to serious erosion and floods, which waste the richness of the earth.

With no bed of leaves and mulch to absorb rainfall, the water runs quickly over the bare ground. Soil and ash are then washed into streams, rivers, lakes, and community reservoirs, killing many fish.

As lakes and reservoirs fill up with silt, they hold less water. In some cases, reservoirs fill up with silt in a few years, making them useless for community water supplies.

When rains are heavy in burned-over areas, rivers fill quickly and their banks overflow. Damage to communities and farmlands downstream is often severe, and many times the whole Nation shares in the cost of rehabilitation.

Raging fires can be very damaging to wild animals and birds.

Forest wildfires destroy vast amounts of valuable timber. This timber is needed to build our homes and our furniture—to supply us with paper of all kinds (from grocery bags to newspapers to stationery to facial tissues)—and for many other products for home and industry. A single fire in Oregon (Tillamook in 1933) destroyed more timber than was harvested in the entire country for a whole year.

Wildfires also kill the young trees—the timber for tomorrow.

They often change a forest of valuable trees into a forest of inferior trees—“weed” trees.





And repeated fires often prevent a new forest from starting—leaving large scarred, barren areas which must be replanted at great cost.

In the United States in 1976, there were more than 240,000 wildfires. They burned 5,110,000 acres. (One acre is about the size of a football field.) That's nearly 8,000 square miles—an area about as large as the State of Massachusetts.

And this wasteful burning goes on every year. What can we do about it? The best way to keep forest fire damage low is to keep fires from getting started.

## How Forest Fires Get Started

First, let's see how these wildfires get started. And then what is being done about them. And finally what we can each do to prevent them.

There are two basic sources of forest wildfires:

One is nature—by lightning.

The other is people.

Lightning is a serious cause of wildfires in the mountains of the West and in Alaska. These fires are often in remote areas where they are difficult to reach and put out, so they can become large fast. They average a total of nearly 1,000 square miles a year over the whole country including Alaska.

People cause wildfires in many ways—both intentional and accidental.



Over the country as a whole by far most of the fires—and most of the damage—are caused by people. Their acts are responsible for 9 out of every 10 forest fires.

What kind of acts?

The principal ones are Incendiarism, Debris Burning, Smoking, Campfires, and Equipment Use. In every case, either lack of knowledge of the hazards, failure to take proper precautions, stubbornness, maliciousness, or carelessness is involved.



Let's examine each of them briefly.

*Incendiary fires* are those set deliberately to burn or spread to the property of others—without the permission of the owners. Sad to say, more wildfires are due to this cause than any other. More than half the area burned in the South each year is the result of incendi-  
arism.



Three out of every 10 fires in the United States during the past 5 years were traced to incendiaries. They burned an average of about 1,000 square miles a year—about the size of the State of Rhode Island.

Almost as serious are fires that are set to *burn debris*—but which escape from control into adjoining woods. These fires burn about 500 square miles a year. Incendiarism and debris-burning together account for over half the annual burned area in the Northeast, over two-thirds in the Midwest, and three-quarters in the South.



*Smokers* are also a major cause of wildfires—around 250 square miles a year.

Quite a few fires also spread from *cooking fires and warming fires* built by campers, hikers, hunters, fishers, and others.

About one half as many fires are caused by *equipment* used in or near woods as by lightning (trucks, cars, farm machinery, logging equipment, etc.).



# How We Can All Help

Since people cause most wildfires, we all have a part in preventing them. We can be more careful ourselves. And wherever we are and whatever position we are in, we can influence others to use more care with fires.

Many forest fires are started accidentally by ranchers, farmers, and homeowners in rural areas when they burn debris. Under the right conditions such fires can spread rapidly to other property and to woods.

Debris burning is something many of us can be much more careful about. The rules are:

*Never* burn trash outside in dry weather on windy days.

*Always* have plenty of available help, tools, and water nearby.

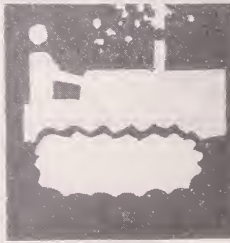
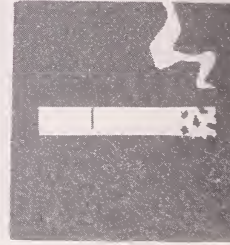
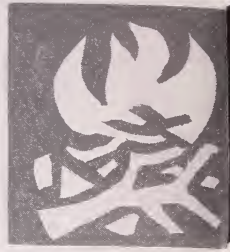
*Don't* burn debris near woods or buildings, or near fields or dry grass.

*Burn only* on bare ground or in a metal container. Clear everything away down to bare ground for 10 feet in all directions before burning. It is usually safer to burn late in the day. Always check first to see if local or State laws require a permit to burn brush, debris, etc., and get one from your fire warden or ranger, if needed.

Many of us are, at different times, picnickers, campers, hikers, fishers, or hunters—and we can unintentionally start forest fires with our cooking fires, campfires, or warming fires. It is good practice to:

*Clear* everything away that could burn, down to bare earth in a circle 10 feet in diameter. Dig a hole in the middle and build the fire there; keep it small.

*Never* build a campfire against trees, logs, or near brush. Before you leave your fire, stir the coals while you pour water over them. Turn the sticks over and soak both sides as well as the earth around the fire. Make sure all sparks are *dead out* by feeling the embers with your bare hand.





When riding or walking through the woods, be careful with discarded cigarette and cigar butts, pipe ash, and matches. Never throw butts or burnt matches from a vehicle; they should go into the car ashtray. When on foot, clear a spot down to bare earth for your used cigar, cigarette, or pipe ash. Grind it into the ground with your heel. Hold your burnt match until the end feels cold to your touch, before tossing it away. At home, of course, keep matches out of the reach of children. Young children accidentally set many forest wildfires.



We have seen that incendiarism—deliberately setting fires to the property of another without permission—is the leading cause of wildfires. To help counteract this, we should report promptly any incident of suspected incendiarism (and all fires) we see to police or forest officials.



Many wildfires can be prevented if equipment commonly used in forested areas is properly maintained. The installation of effective spark arrestors on tractors, trucks, and other machinery is also important, and is a legal requirement in many areas. Special precautions should always be taken when refueling chain saws and other equipment in the woods.



Teachers and youth group leaders are in a unique position to develop in the young good attitudes and habits toward fire prevention.

Teachers and leaders of youth, service, fraternal, sportsmen's, social, and women's clubs should learn all they can about the wildfire prevention program in their area. They can do this by contacting local fire officials, forest and park rangers, and others—and by obtaining booklets and other printed materials on the subject.



They can feature appropriate movies, slide talks, and qualified speakers on fire prevention in their classes and at their group meetings. They can pass out fire prevention pamphlets to their listeners. They can familiarize themselves and others with problems involved in fire prevention in their local area.



## Using Controlled Fire For Special Purposes

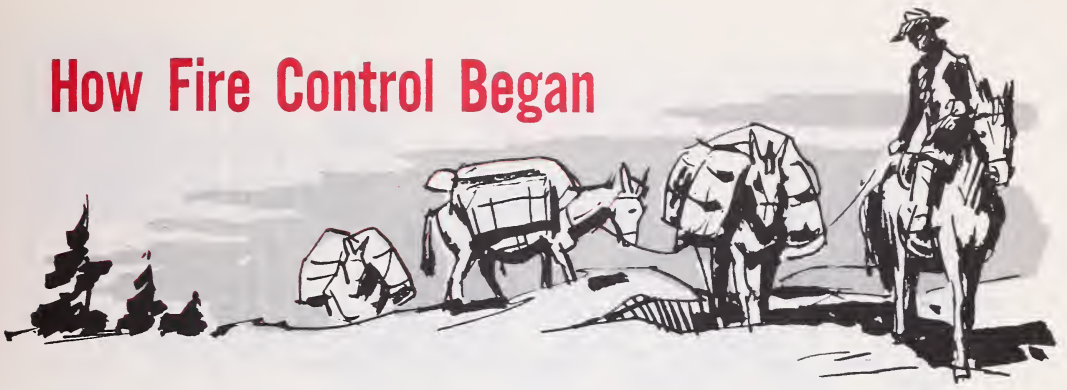
Techniques have been developed which make it possible for a forestry expert, at certain times and under very careful control, to accomplish special needed results by using fire. Fire then becomes a useful tool for the land manager to improve and protect the forest. Under these conditions, fire may be used to:

1. Control certain insects and diseases.
2. Eliminate scrubby, undesirable growth such as inferior hardwood trees in stands of southern pine.
3. Expose mineral soil so that seeds of desirable tree species—like Douglas-fir in the West—will germinate and grow.
4. Safely clean up heavy underbrush or limbs that remain after logging, which otherwise might cause a disastrous wildfire.
5. Open up small areas in the forest so that shrubs and herbs will grow and provide needed food and cover for wild-life.

When fire is used by trained and experienced foresters for a necessary purpose, it is called *prescribed burning*. Foresters use great care and advance planning when using prescribed burning. They make sure that temperature, humidity, wind, and other weather conditions are right. A fire lane, road, stream, or other barrier is used to form borders around the area to be burned so that the fire cannot easily spread beyond. Foresters have fire control equipment and crews on hand to stop any possible undesirable spread.

Whichever of the constructive purposes burning is done for, the job gets done safely only by a professional trained in the use of fire.

# How Fire Control Began



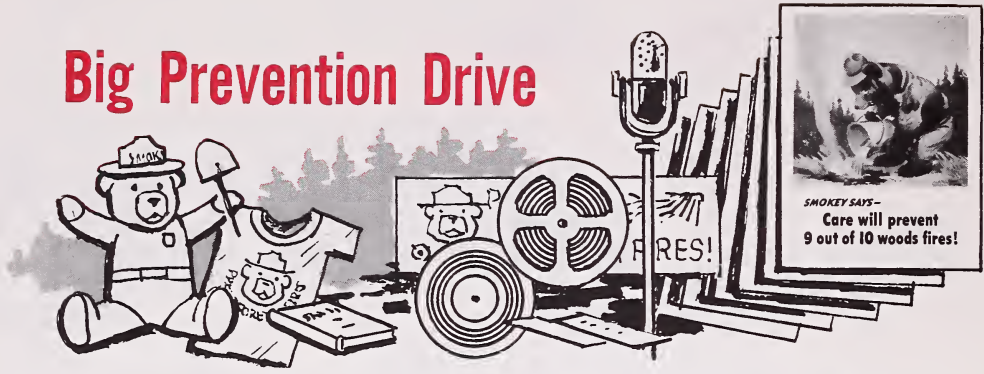
Effective steps to protect our forest and range lands from fire were first taken in the early years of this century. Owners of large timber lands in the West banded together to form forest protective associations and to patrol their lands during the fire season. In 1905, the Forest Service was created in the U.S. Department of Agriculture to manage the huge areas of Federal forest reserves (now called National Forests). The new agency gradually developed a complete fire control organization to protect its widely scattered lands.

The numerous disastrous fires between 1900 and 1910 stimulated action by many States to organize control measures. In 1911, the Federal Government, through the Weeks Law, established a program of Federal-State cooperation in fire protection on State-owned and privately owned forest land. Eleven States signed up that year.

This cooperative program was greatly expanded in 1924 under the Clarke-McNary Act, and has grown steadily since. Every State is now participating. Of the \$150 million annual cost, the States spend about 85 percent. Today some 725 million acres of State and private land are being protected by State forestry agencies. Twenty-five Eastern and Southern States and two Canadian provinces have banded together in four area interstate firefighting compacts for mutual assistance. This program began in 1949 with the northeastern compact of the six New England States and New York.



# Big Prevention Drive



A strong nationwide effort in wildfire prevention was begun in 1942. It was a cooperative project from the beginning, with State Foresters, the Wartime Advertising Council, and the Forest Service involved. A poster featuring Smokey Bear was circulated in 1945. This symbol soon became very popular. In fact, a recent survey showed "Smokey" is a known symbol to almost all Americans.

Canada and Mexico also participate in the Smokey Bear fire prevention program. The Canadian Forestry Association is the official agent in that country for Smokey Bear publicity materials, and distributes them to the Provinces. Mexico uses the "Bear" symbol, calling him "*Simon El Oso*" (Simon the Bear).

A live "Smokey" has long been a favorite animal in the National Zoo in Washington, D.C. The original live Smokey was found in a wildfire in New Mexico in 1950. He was a badly burned cub.

In 1975, after 25 years of public service, the original live Smokey Bear reached retirement age and passed on his hat, shovel, levis, and name to a young bear during ceremonies at the National Zoo. This Smokey died in 1976 and he was buried at the Smokey Bear Historical State Park in Capitan, N. Mex. Smokey Bear, in new quarters, continues to greet some 3 million visitors to the National Zoo each year.

The Smokey Bear program has been one of the most effective campaigns in history using an animal symbol to influence public opinion favorably in combating a serious national problem. Since the campaign began, wildfires have dropped dramatically both in number and in total area burned. Smokey has proven both an authoritative and a lovable figure.

The slogan, "*Only You Can Prevent Forest Fires.*" coined in 1947, has proven so effective that it is still used regularly in posters, radio and television public service announcements, ads, flyers, etc. Since it was found that young children playing with matches start many forest fires, a companion theme was added to Smokey's Cooperative Forest Fire Prevention Program. It is "*Smokey's Friends Don't Play With Matches.*" It, too, has been effective. These messages are taken very seriously by children, who often chide their own parents for bad habits with fire.

To give youngsters the feeling of direct participation in preventing wildfires, a nationwide Smokey Bear Junior Forest Ranger program was developed in 1953. Most Ranger appointments are made at Smokey Bear Headquarters in Washington, D.C. 20252. But some State forestry agencies cooperate by distributing these kits in their areas.

All 50 States participate in the cooperative prevention program, through State and local forestry, park, fire control agencies, and other agencies in the U.S. Department of the Interior, as well as other Federal departments with extensive landholdings.

Outdoor sports, conservation, women's and youth organizations, and their State and local affiliates also cooperate as do forest industry groups.

Special independent campaigns have been carried out by organizations like the American Forestry Association and the American Forest Institute (formerly the American Forest Products Industries). The AFPI in 1941 sponsored the "*Keep Washington (State) Green*" project, which soon spread to Oregon and many other States, and is now active in 38 States. The American Forestry Association in 1928 started an educational campaign in the South against the prevalent custom of woods burning, using a traveling movie exhibit.

In 1956, AFA started another campaign in the South with strong support from the State Foresters. Two years later, the Forest Service of the U.S. Department of Agriculture and the Advertising Council joined AFA and the State forestry agencies in organizing a long-range publicity drive against incendiarism and careless debris burning in the South. The campaign is still continuing.

The aim is to change the attitude of the general public toward such burning, so that everyone will see the incendiary as a person who is causing harm to society and must be curbed. Efforts are being carried on in the Northeast and Midwest where incendiarism and debris fires are also very serious. State forest fire laws and their enforcement are being strengthened.

The one-man lookout tower on a high mountaintop was for years the first line of defense against forest fires, and is still essential in many areas. But a dramatic breakthrough in forest fire control was the use of airplanes, first in 1919 for fire detection patrols, then later to drop men, supplies, water, and fire-retardant chemicals. Use of helicopters followed, along with power equipment, radio communication, electronic equipment, and other modern devices.

# Cooperative Fire Control Gets Results



Cooperative prevention and control programs were pioneered by major timber growing States, the Forest Service, U.S. Department of Agriculture, and U.S. Department of the Interior agencies. They have greatly reduced wildfires—in the face of a rapidly growing population that is spending more time in and near forests.

For example, in 1976 fewer than 1,200 acres were burned for each million acres under organized protection. On lands without such protection, 16,000 acres were burned per million. But in 1939, the comparable figures were 70,000 and 175,000 acres per million respectively.

The area of forests and related lands burned has averaged over 4,400 square miles a year during the past 5 years. And in the 1930's there were more than 200,000 fires and more than 47,000 square miles burned each year. That's an area as large as the State of Mississippi, or New York, or Pennsylvania—every year.

Large, well-organized Federal, State, and private cooperative control and prevention programs, greatly assisted by generally excellent cooperation from the public, have been responsible for this great reduction in the number and extent of wildfires.

Protecting America's forests from wildfire is a tremendous job.

The combined cost of fire-fighting and fire prevention nationwide is about \$500 million a year. This includes Federal, State-owned, and privately owned forest land—about a billion and a half acres, or one-half of the entire country. (It does *not* include the much higher cost in resources lost.)

State and Federal wildfire control has to be paid for from taxes—yours and mine. As long as fires caused by people continue to be so prevalent, this tax burden will continue. From another point of view, if fires caused by people could be more drastically reduced, much of the tax money now used against these fires could perhaps be used to meet other needs.



Forest Fire research yields knowledge and systems to make fire protection more effective and less costly. Here, specialists from the Georgia Forestry Commission use a simulator model to maximize the cost effectiveness of a fire control program.

(Photo courtesy Georgia Forestry Commission)

# Toward a Better Environment

The decade of the Eighties promises to be one dedicated to halting and reversing the long decline in the quality of the American environment.

The American people are now acutely aware of the alarming threat of pollution to the future of mankind and all other forms of life—pollution of the air we breathe and the water we drink. They are demanding, rightly, that strong and effective action be taken. The drive has begun, at all levels of government and by industry and aroused citizens.

Forest wildfire prevention and control play an important part in this effort. Fewer and smaller wildfires mean less air and water pollution. Fewer and smaller wildfires mean a more beautiful natural environment.

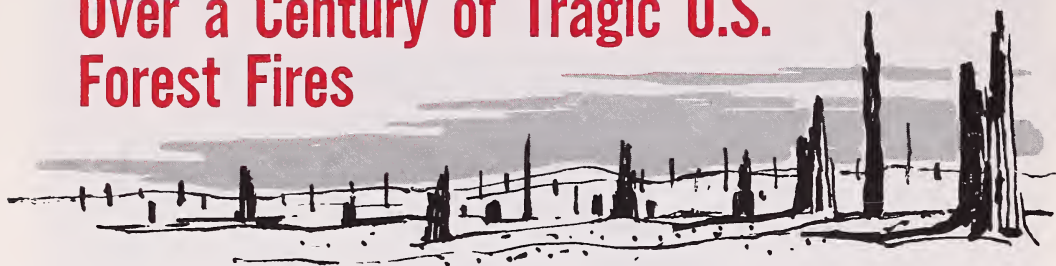
We all agree on these goals. We can all help to reach them. Will you do your part?

## For More Information

You can obtain colorful fire prevention posters, other display material—and booklets with more information about forest, woods, brush, and grass fires and the damage they do—and how you can help prevent such fires, by writing to one or more of the following sources:

1. State Forester or Commissioner of Conservation of your State, at the State capital.
2. Regional Forester, Forest Service, U.S. Department of Agriculture at the nearest of these nine locations:  
Federal Building, Missoula, Montana 59807  
11177 W. 8th Ave., Lakewood, Colorado 80225  
517 Gold Avenue, S.W., Albuquerque, New Mexico 87102  
324 25th Street, Ogden, Utah 84401  
630 Sansome Street, San Francisco, California 94111  
319 S.W. Pine Street, Portland, Oregon 97208  
Suite 800, 1720 Peachtree Road, N.W., Atlanta, Georgia 30309  
633 W. Wisconsin Avenue, Milwaukee, Wisconsin 53203  
Federal Office Building, P.O. Box 1628, Juneau, Alaska 99802
3. Director, Cooperative Forest Fire Prevention Program, Forest Service, U.S. Department of Agriculture, Washington, D.C. 20250 (Smokey Bear Program).

# Over a Century of Tragic U.S. Forest Fires



The worst forest fires in U.S. history, in terms of loss of human life, were in the Great Lakes region, where between 1871 and 1918 over 3,400 lives were lost, several towns were destroyed, and 6 million acres of trees were burned in nine great fires, all connected with large lumbering operations.

Today, loss of human life is less, but loss of homes, businesses, and other property is often very high. This is true especially in heavily populated areas like southern California, where thousands of communities are creeping into forests and dense brushlands. These woods are often dry as tinder and assaulted by fierce, hot desert winds.

Forest fires don't break out only in summer. They can occur at any time that forests are very dry—from early spring to late fall. In the South, bad fires can break out any month of the year, and some of the worst have been in winter. Recent severe fires in the Far West (1967 and 1970) occurred in late summer and fall.

*The 1976 fires in California, Oregon, and Alaska.* During the summer of 1976, wildfires seared over 2½ million acres of wildlands in the West. In California 410,000 acres burned. The largest of these fires was the Marble Cone on the Los Padres National Forest. It burned 174,000 acres and cost \$13 million to suppress. The Hog, Gerig-Meyers, and other large fires burned in different locations at the same time. In Alaska, the Bear Creek Fire raged over 374,000 acres. In all, seven fires burned more than 130,000 acres each in Alaska. Another 12 grew larger than 10,000 acres.

*The 1970 fires in Washington and California.* During 3 weeks of dry, hot weather in late August and early September, hundreds of lightning fires struck the heavily forested Cascade Mountains of central Washington. They merged into three large fires (Entiat, Mitchell Creek, and Gold Ridge), burning 113,000 acres, and killing two of the 8,500 firefighters. Over 300 miles of fireline were built, and a million gallons of chemicals dumped from planes to stop the spread of the fires.

In central and southern California during the last week of September and the first week of October 1970, well over half a million acres of forest and brushland (820 square miles) were reduced to ashes. Much of this land was in the mountains east of Los Angeles and San Diego. Fourteen people were killed and hundreds of homes were destroyed. Property losses exceeded \$150 million. The largest of the California fires was the Laguna fire near San Diego, 187,000 acres. Five others (Bear, Buckeye, Meyer, Rankin, and Red Mountain) burned 195,000 acres.

*The 1967 fires in Idaho, Oregon, and California.* The Sundance and Trapper Peak lightning fires burned 73,000 acres in extreme northern Idaho and adjoining British Columbia and Washington, early in August. Other fires burned 120,000 acres in Idaho and Oregon. During late October and early November in California, 83,000 acres were devastated and five persons lost their lives by fires that were principally caused by people. California also had severe fires in 1966, 1964, 1955, and 1932.

*America's worst fire*, in lives lost, was the 1,280,000-acre Peshtigo fire near Wisconsin's Green Bay in October 1871; it claimed 1,500 lives. In the same month, 750 lives and 240,000 acres of timber were lost in the Humboldt fire, also in Wisconsin. At the same time, two fires in lower Michigan (Holland and Manistee) devastated 2½ million acres and took ten lives. Another Michigan fire (Lapeer) in September 1881 ravaged over a million acres and cost 138 lives. Two Minnesota fires had high death tolls—Hinckley, September 1894, 418 dead, 160,000 acres burned; and Cloquet, near Duluth, October 1918, 400 dead, 250,000 acres burned.

In the *Great Idaho Fire* of August 1910, 85 persons lost their lives, 74 of them firefighters. Several towns and nearly 3 million acres of timber (partly in Montana) were destroyed. Forty firefighters were saved when their leader took them to an old mine tunnel while the blaze roared overhead. Large areas of adjoining Washington and Oregon were also consumed that summer.

*The Tillamook or Wilson River Fire* in Oregon in August of 1933 burned over 267,000 acres and destroyed 13 billion board feet of virgin timber—more than was harvested in the entire country for that year. The same general area burned again in 1939 and 1945. The big job of reforestation was completed in 1972, nearly 40 years after the original fire.

Of the many fires in the *South*, five stand out in recent years: The Kentucky fire of October 1952, partly in West Virginia, over 2 million acres; the Buckhead fire in north Florida in March 1956, 100,000 acres; the Okefenokee fire in Georgia, October 1957, 100,000 acres; the Shark Valley fire in Florida, May 1962, 184,000 acres; and the South Carolina fires of April 1966, 79,000 acres.

*The Northeast* has had some bad fires: New Jersey pinelands in April 1963, which killed seven persons and burned over 110,000 acres; the Maine fires of October 1947 which blackened 233,000 acres, killed 16 persons, and destroyed over 800 homes in the resort of Bar Harbor and other towns; and the Adirondack State Forest Preserve fire in New York in 1903.

Today's largest fires occur in the sparsely populated interior of *Alaska*, caused mostly by lightning and campfires: 4 million acres in 1969, 1 million in 1968, 5 million in 1957. Before Federal fire control began in 1939, the annual toll was 5 to 8 million acres.

Other large fires:

In *California*—Marble Cone, 1977, 174,000 acres; Wellman, 1966, 92,000 acres; Santa Rosa and Santa Barbara fires, 1964, 130,000 acres and 75 homes destroyed; the fires of 1955, one life and 307,000 acres; Matilja Canyon, 1932, 220,000 acres.

In *Texas*—1947, 55,000 acres.

In *Minnesota*—Baudette, 1910, 42 lives and 300,000 acres (partly in Ontario).

In *Wisconsin*—Phillips, 1894, 13 lives and 100,000 acres; Comstock, 1891, 64,000 acres.

In *Oregon and Washington*—Yacolt and Columbia fires, 1902, 18 lives and 600,000 acres; St. Helen fire, 1868, 300,000 acres.

In *Oregon*—Coos Bay, 1868, 300,000 acres; Silverton, 1865, a million acres; Nestucca, 1860, 320,000 acres; Yaquina fire, 1846, 450,000 acres.

In *Wyoming*—Bighorn fire, 1876, half a million acres.

In *Maine*—Seboeis, 1837, 130,000 acres; Miramichi, 1825, 160 lives and 3 million acres (partly in New Brunswick); Piscataquis, 1825, 830,000 acres.

**These tragic losses need not be repeated.  
Our forests are valuable resources.  
Please—won't *you* help prevent forest fires?**





Your State Forester  
and  
Forest Service—U.S. Department of Agriculture